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AW

11-13-2008

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Christoph Gauer  
Serial No.: 10/501,501  
Filed: June 28, 2004  
For: TITRATION METHOD

Examiner: Kingan, Timothy G.  
Group Art Unit: 1797  
Docket: 298-248

### DECLARATION

Sir:

I, Dr. Achim Wixforth, do hereby declare:

1. I am the applicant named on U.S. Appln. No. 09/766,677 published as Pat. Pub. No. US 2001/0055529 being applied against the claims pending in the above-identified U.S. application and inventor of all subject matter being claimed in US 2001/0055529;

2. US 2001/0055529 discloses the basic principles of surface acoustic wave (SAW) mediated movement of small quantities of matter on a surface, in general, and focuses upon manipulating a single quantity of matter, e.g., a single droplet of liquid;

3. In certain embodiments disclosed in US 2001/0055529, SAW-driven movement of two or more droplets is also disclosed. For example, as explained in paragraph [0039], a quantity of matter can be divided into two parts by irradiating the quantity with a SAW so that as a result, both parts will move away from each other;

4. On the other hand, using two SAW generators, two liquid droplets can also be moved into each other as disclosed in paragraph [0041]. For example, if two liquid droplets should be combined for reaction purposes, then both such droplets are put in motion and meet in a reaction area, as disclosed in paragraph [0054] of US 2001/0055529;

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5. In both instances set forth in paragraphs 3 and 4 *supra*, both droplets are set in motion. Possibility of overcoming the surface tension and subsequently separating a droplet by SAW, is further explained in paragraph [0047] of US 2001/0055529. However, there is no indication in either paragraph [0047] or any other portion of US 2001/0055529 on how to achieve separation of liquid into *measurable amounts*, e.g., for titration;

6. The procedure of *titration* involves determining concentration within a first solution (e.g. of a specific ingredient) by *gradually* adding a second solution of known concentration (titrant). More specifically, *measurable amounts* of the second solution of known concentration are *gradually* added to the first solution of unknown concentration, until a specific reaction takes place, e.g., a color change. Depending upon the total amount of second solution added to the first solution, concentration within the first solution (of the specific ingredient) can be accurately determined;

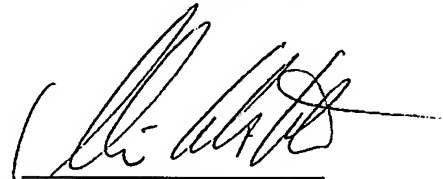
7. If I were interested in improving titration, e.g., improving accuracy by reducing individually measurable amounts of titrant to be added, then I, one skilled in the art, would look to conventional titration methods and scale down conventional titration apparatus to add smaller measurable quantities of titrant. I would not look to surface acoustic wave (SAW) mediated movement of liquid droplets on a surface as disclosed in US 2001/0055529 because there is no suggestion in US 2001/0055529 of separating a liquid (titrant) into *measurable amounts* and then *gradually* moving and adding such separated amounts to a larger droplet for titration. There is no disclosure or suggestion in US 2001/0055529 of a titration procedure involving titrating a liquid droplet of unknown concentration by *gradually* adding *measurable amounts* of titrant while, at the same time, maintaining the liquid droplet of unknown concentration stationary at all times;

8. Accordingly, the disclosure found in US 2001/0055529 fails to suggest to me, one skilled in the art, the titration method being claimed in the above-identified U.S. application; and

9. Further, I declare all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further these statements are made with the knowledge willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and such willful false statements may jeopardize the validity of this application or any patent issued thereon.

11/13/2008

Date



Achim Wixforth



**Lab-on-a-chip technology - revolution in the (bio-)analytic lab**

(Laborwelt Nr. 1/2000, pages 36 to 38)

Dr. Odilo Müller, Agilent Technologies Deutschland GmbH, Waldbronn

5. *[Faint, illegible text]*

**Abstract:**

10 The lab-on-a-chip technology allows transfer of complex working operations from an analytic lab to a small piece of glass or plastic, a so-called chip. Through a cunning manipulation of the liquids, pumps, valves, reaction vessels, even complex analytical instruments can be simulated on the chip. The automatic processes proceed faster and more precisely than it is possible in a traditional lab. The first generation of apparatuses which already use the lab-on-a-chip technology are marketed and are used for analysis of nucleic acids.